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CONTROL METHODS AND PROFITS

By

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for

Degree of

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FOREWORD

The present depression, which began in 1928, has originated various opinions in regard to the conduct of business. Business, under the guiding hand of management, has been making various drastic changes in regard to its financial and operating methods, so that its doors will remain open and profits will be shown. One of these changes which has been the subject of much discussion is the policy of wage cutting. The purpose of such a policy is said to be the prevention of an increase in unemployment and the reduction of the cost of manufacture. As I do not favor this policy, I have taken the subject, "Control Methods and Profits," for my thesis for the degree of Master of Business Administration. With the adoption of these methods as an aid to more efficient management, manufacturing expenses will be lowered and better controlled, thereby minimizing the necessity of instituting general wage reductions.

CHAPTER I.

CONTROL METHODS AND PROFITS

Conditions such as those which have been in existence not only in this country but all over the world since 1928 are detrimental to the public in general and especially to business men. However, during their destructive course they do bring to everybody various lessons of value. For example, present circumstances have emphasized not only to industrial leaders but to the average worker the importance of successful management and control of business. Practically every person has to exercise the function of management. The employee has a personal estate or personal property which must be safeguarded; the employer has a business which must be conducted in a satisfactory manner for the benefit of himself, the stockholders, or the owners. The purpose of conducting the affairs of a business or of a personal estate carefully is to increase the income from year to year. In other words, a profit should be shown, and the business or personal estate should be advancing in value and not declining. During the years from 1922 to 1928 money was plentiful, business was prosperous, wages were increasing, and profits were easy to realize. The result was that business men and people possessing personal estates did not give especial attention to management but, in fact, were likely to be rather lax with respect to the details of efficient operation.

The term "profits" is used with many meanings, not only by economists but also by accountants, lawyers, and business men. Four different meanings of it are recognized in "Outlines of Economics" by Dr. Richard T. Ely,[1] viz., ordinary profits, business profits, minimum profits, and pure profits. Ordinary profits constitute the difference between money income and the actual or contractual expenses of producing or acquiring that income. Business profits are computed by deducting wages imputed, called "wages of management," from ordinary profits. These wages of management include such items as imputed rent and interest. Minimum profits are obtained from the sum of imputed wages, rent, interest, and the like; or, in other words, they constitute what would be received if services were sold, land rented, or capital loaned. Pure profits constitute the difference between minimum profits and ordinary profits. Other definitions of profits have been obtained from various sources; some of these definitions are well worth considering and quoting:

> "Profit is used to indicate the amount of increase in the net worth or proprietorship of a business over a period of time."[2]

> "Profit is the excess of returns or income over expenditure in a given transaction, business, or the like."[3]

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1. "Outlines of Economics," Richard T. Ely, p. 514.
2. "Accounting Theory and Practice," Kester, Vol. I, p. 36.
3. "Webster's Collegiate Dictionary."

> "Profits are the residual surplus of a business enterprise, and are represented by the difference between selling price and total cost."[4]

These definitions really mean about the same, although the methods of expression are different. For my purpose the meaning of ordinary profits is preferred, and on that basis whenever the term "profit" is used, it is to be construed as meaning the difference between total money income and the total actual or contractual expenses of producing or gaining that income. Profits vary with the capacity of the enterprise. Because of superior organizing ability, more favorable purchase of raw materials, or more intelligent advertising or selling, one enterprise surpasses another in earning power. And the greater the productivity, the greater the profits.

One is not justified in drawing conclusions relative to a business from the profits of a single year. To obtain a proper criterion, average profits over a period of years must be taken. Furthermore, the earning power of various firms in the same field varies, great success being encountered by some and differing degrees of losses by others. The underlying principle of such occurrences is the ability of those in charge to conduct the affairs of the business in such a way that the best possible profits will be earned. With all things equal, the ability to manage or the managerial capacity of those

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4. "Cumulative Loose-leaf Business Encyclopedia," Vol. II, p. 76.

in charge is the principle upon which the business runs successfully, and, therefore, one of the underlying methods of obtaining profits consistently is correct and proper management.

To both those people who are actively engaged in business and those who are not, the meaning of management varies, and for that reason several definitions will be given:

> "Management is concerned almost entirely with the future. Its task is to decide on policies and to take action in accordance with those policies which will bring about a desired condition. Decisions which affect the future must be based on a knowledge of what has happened in the past."[5]

The Metropolitan Life Insurance Company has made a study of business; in its report we find the following definition as given by Mr. Earl Morgan of the Curtis Publishing Company:

> "Management is simply getting people to work together as a team to the end of maximum productivity at the lowest unit cost, and success in any organization depends in the final analysis on how management develops the individual and collective morale of the personnel."[6]

The definition of management approved by the Management Division of the American Society of Mechanical Engineers is unusual because it classifies management as an art:

> "Management is the art and science of preparing, organizing, and directing human effort

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[5] "Gantt Chart," Clark, p. 3.

[6] "Business Organization," Metropolitan Life Insurance Company, Rept. IX, p. 3.

applied to control the forces and to utilize the materials of nature for the benefit of man."[7]

From the foregoing definitions it is shown that the meaning and purpose of management is to look into the future, study the activities of the past, coordinate this knowledge, draw conclusions and set up plans, apply these conclusions and plans to the business, and then operate accordingly. The purpose of doing this is to take advantage of the business opportunities that may present themselves, manufacture according to the conditions that are in existence, and then, when everything is done, be able to show a profit as the result of efficient management.

Management has become more intensive since 1928, with the result that at the present time we are witnessing the adoption of more practical and economical methods and policies. Many firms have had to go out of business, many have suffered severe set-backs but are still able to operate, and many have had to be reorganized. Management has had to adjust industry and business to the conditions of the day. During the period of 1922-1928 business was experiencing an expansion of markets, so that manufacturing concerns could keep their plants operating at capacity. In order to do this, money was spent freely and the cost of overhead was disregarded, for competition was slight. Overhead costs were absorbed by price

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7. "Waste in Industry," Committee on Elimination of Waste in Industry of the Federated American Engineering Societies, p. 8 (footnote).

without affecting sales, and in order to increase sales and manufacture for volume, the expenditures[8] for selling and sales promotion increased more rapidly than the volume of sales. To carry on this vast program of production, expenditures were made for equipment, plants, and materials, without systematic planning or thought of the future. During prosperous times such proceedings were not harmful but, as history and the business cycle show, there is always a peak or turning point, and from then on the conditions and policies are different. Such had been the conditions, and the year 1928 marked a turning point of great consequence.

Today, except in unusually favored industries or those manufacturing new products, the contest between output and demand is over. Estimates are made of the probable future prices of the commodities in which the manufacturer is interested and also of the probable cost of acquiring or producing such articles. If the difference between the estimated price and the estimated expense of production is large enough to justify the risk of production, the task is undertaken. The reasons for proceeding in such a manner are threefold:[9] production facilities have overrun the market; prices have felt the competitive lash; and profit margins have shrunk.

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8. "Recent Economic Changes," Rept. of Committee on Economic Changes, p. 421.
9. "Hammermill Survey of Business Practice," Rept. III, p. 3.

Competition today is distinctly in management, a fact which the more successful companies have recognized. Profits are becoming concentrated among larger and supposedly better-managed companies. A recent survey[10] shows that a decrease in profit margins is still going on, especially among smaller enterprises. The tendency towards reduced profits has made it necessary that each department and the operation of each activity be studied closely in order to lower costs and increase production. Management has recognized the fact that, in its pursuits of profits, its methods have been unbalanced. Acquiring money has been overstressed, whereas saving money has received too little attention. For this reason reduction of overhead is one of the major problems of management.

Since management has realized that the proper solution of its problem is not in the marketing of its product, it has turned to the elimination of excessive costs. In this direction there are three main classifications in which the executive can exert influence in the interests of better management:[11]

(1) the relation with the outside or sales methods and selling force;

(2) the improvement of the internal organization;

(3) the improvement of the plant, regarded as a physical organization.

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[10] "Hammermill Survey of Business Practice," Rept. III, p. 3.

[11] "Cumulative Loose-leaf Business Encyclopedia," Vol. I, pp. 364, 365.

This subject does not refer to the selling organization but, rather, to the improvement of the internal organization and the plant.

However, not losing sight of current conditions which require a limited production and forced reduction of overhead, management must keep the future in mind. This fact cannot be overemphasized. Also, the fact that competition never ceases must not be overlooked. New competition must be regarded seriously, because new competitors usually have the advantage of the most up-to-date equipment and advanced ideas. But there is no reason why the executives in an established firm should not be informed of the most recent developments in their particular field and be prepared to take advantage of improvements. Present-day research gives management a chance to base its decisions on facts as ascertained from reliable sources.[12]

It is evident that management is taking steps to adjust business to existing conditions. However, in order to obtain the desired results, what specific steps are being taken or what policies should be employed? It is possible to slash costs here and there and to make elimination wherever it is thought necessary; but, in so doing, the true benefits and best results will not be obtained. A careful study must be made, and the result

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12. "Recent Economic Changes," Rept. of Committee on Economic Changes, p. 546.

of this will be the adoption of policies which must be applied systematically and with careful attention. In most instances the result of these studies has been in the adoption of four major control methods:

1. production control
2. budgetary control
3. cost control
4. inventory control

All four of these systems have been acclaimed by management experts as of great benefit to the successful operation of a business.

These four major control methods of business are not new and are not unknown to executives. During recent years they have been the topic of much discussion among the executives of management, and many arguments both for and against them have been given. Some of the history of budgetary control will be given in the chapter devoted to that subject, and for that reason it will not be referred to here. Production control, cost control, and inventory control first came into prominence during the war. Shortly after the war business was slack and there was a depression of about two years' duration. During this period considerable emphasis was placed on these methods and their relative merits. However, business picked up rapidly and suffered no serious setback until the beginning of the present depression. During this business recovery control methods were not discussed so freely, and whenever they were referred to, it was with

the apparent thought that they were not so important as previously stated. Business was so prosperous then that there was no need for adopting such methods. Moreover, consumers were taking everything that could be manufactured. Yet, even though conditions were so prosperous, many firms used these control methods to a slight and almost unnoticeable degree, with the result that they were better fitted to meet the business depression which began in 1928 and still exists.

Production control, cost control, and inventory control, although they had received some attention during the postwar period, have actually come into prominence and become instruments of modern management during the present business crisis. Practically every business enterprise uses them to some extent, either consciously or unconsciously. Many, however, think that such control methods are adaptable only to businesses of an industrial line. Until recently such an opinion might have been correct, but at the present time we find business of all types using such management policies. Today we find the offices employing such methods although they may prefer to consider them under other titles. Insurance companies and other businesses of similar nature are planning, scheduling, routing, and assigning their work among their employees. Because of this tendency of modern management to employ these four control methods in every line of business, they are going to be described and discussed separately. The

purpose of doing this is to show that such methods are conducive to obtaining profits and are of great assistance in controlling a business.

CHAPTER II.

PRODUCTION CONTROL

Although each control method is being considered separately, the individual operation of these four methods in business is not very beneficial. To obtain the best results and greatest value, the four control methods should be used together, for they are all dependent upon one another for necessary details and valuable information. They are similar to the blocks which form the foundation of a structure. As long as the blocks are together as a unit the foundation is firm, but as soon as one or more are removed, the foundation and structure are weakened. Such is the case here. As long as these major control methods are employed together, the efficiency and expense-saving program is effective; but, as soon as one is removed, the whole system is weakened and the efficiency program is of less value. Therefore, the necessity for using production control, budgetary control, cost control, and inventory control as a unit can be readily understood.

Production control is concerned with the improvement of the internal organization and of the plant as a physical organization. Nothing influences every factor--labor, material, equipment, and product--quite so thoroughly as does production control. It is a powerful and profitable mechanism when properly applied, but a dangerous instrument if misapplied. To exemplify this statement we shall refer only to industrial business, because that is where such a policy is most commonly in use at the present time.

One[1] of the major handicaps to the progress of most business enterprises is insufficiently scheduled and inadequate control of activities. This is precisely the problem with which production control deals and to which it will lend a guiding hand. It is a mechanism that deals with production from the time the raw material is received at the receiving platform until the finished product is delivered from the shipping room. In many instances it reverts to the giving of orders for purchases, and in this aspect production control and inventory control are linked together. In order to apply this powerful and profitable system adequately, the four elements of planning,[2] routing, scheduling, and dispatching must be considered.

These four elements coordinate the activities of every phase of production and bring about a more harmonious operation of the entire plant. The result of such systematic operation is the lowering of the cost of production per unit, which in turn increases the profits to be received. When a smoothly running organization is maintained and all the operations are planned and scheduled, there are fewer idle moments, fewer idle machines, fewer idle employees, and less waste of material. These seemingly minor incidents are of great importance and should receive careful consideration because they are major factors from the viewpoint of costs.

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[1] "Hammermill Survey of Business Practice," Rept. II, p. 4.

[2] "Business Organization," Metropolitan Life Insurance Co., Rept. 12, pp. 16, 17; "Handbook of Business Administration," W. J. Donald, Editor-in-chiaf, pp. 605, 606.

The element of planning receives its impetus and information from a production schedule which is based on a budget that has been prepared for the ensuing year and broken down into periods of time, such as a month. It is in this aspect that production control is coupled with budgetary control, which is to be considered in a later chapter. From this production schedule and the outside orders which are being received at various intervals, the future operations of the plant are planned. In doing this the production program is fitted to the sales program, and production is stabilized by avoiding peak periods. These peak periods have a tremendous influence on labor because they signify the releasing of employees during slack times and their rapid hiring during busy times. Such actions are costly and do not result in proper control of labor, for the employee is looking for steady employment and will search for the place that offers such opportunity. Owing to this fact, the skilled and more efficient employee cannot always be obtained at the proper time, and this requires that new employees must be continually in training--a very costly procedure. The personnel turnover should be kept as low as possible by stabilizing production and avoiding seasonal fluctuations.

The production schedule and the orders which are being received are analyzed, and all necessary details and information noted. By this means the tools, machines, and type of labor necessary for construction are determined, as

Original

INDIVIDUAL SCHEDULE OF CONSTRUCTIVE WORK

To: Department
From: Schedule for Weeks Ending ---, 19--

Tentative outline of your constructive work for the coming month. Please return duplicate copy noting (1) any work which may have been overlooked; (2) special work or problems that may arise and interfere; (3) your opinion as to feasibility of completing each stage of the work in the time indicated.

Unfinished Projects Continued:

New Projects Begun:

Projects Carrying Over into Next Period:

Week		Notes
	(An individual work schedule is valuable because (1) it stimulates and assists the worker by giving him a definite mark	
	to shoot at; (2) it acquaints him with the time requirements; (3) it helps to prevent misunderstandings and delays.)	

Comments:

Illustration No. 1.

From "Hammermill Survey of Business Practice," Rept. II, p. 6.

PROGRESS REPORT ON CONSTRUCTIVE WORK

A written record of the progress of construction work you are doing not only assists in planning and assigning this work in your department but also is of value in helping you to organize and schedule your own work. This blank should be filled out weekly and placed in the ten o'clock collection MONDAYS.

Name — Department — For Week Ending 19

	Remarks
Monday:	
Tuesday:	
Wednesday:	
Thursday:	
Friday:	
Saturday:	

Next Week:

Unfinished Projects

New Projects

Unscheduled

Percentage of total time given to construction work ____%.

(These reports (1) enable executives to plan and to coordinate many separate jobs; (2) reveal work or danger points while there is still time to correct them; (3) help the worker, because they direct his attention to work accomplished and work remaining to be done.)

Illustration No. 2.

From "Hammermill Survey of Business Practice," Rept. II, p. 8.

well as the material that will be needed for the product. Such a method of planning tends to have all the required implements ready and in perfect condition when manufacture of a certain product is begun. Furthermore, there tends to be a decrease in unnecessary delays, owing to lack of material, labor, or equipment. The result of such a procedure is that all equipment is kept active and as soon as one job is finished, another is ready to be initiated. Whenever repairs have to be made to the machinery, the planning is not seriously affected because the remainder is retarded to a small degree. Then, when all machinery is in perfect running order again, the part that had been disabled is speeded up until the activities of the original plan are maintained. Without production planning such adjustments could not be made without serious results. Moreover, such adjustments and methods eliminate the loss of time by operators.

Closely allied with planning is the element of routing, which directs materials from the receiving room to the shipping room. The purpose of this is to concentrate operations and improve plant-production methods in order to obtain maximum output per square foot of floor space. Idleness,[3] whether in materials or equipment or floor space, means waste of money. In applying this element of production control, a definite plan of arrangement for each plant, providing for a direct flow of materials from receipt of raw material to shipment of finished product, must be fol-

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[3] "Graphic Production Control," Knoeppel, p. 33.

lowed. This may cause a rearrangement or relocation of present production units, but in so doing the benefits received will exceed the costs. Routing[4] endeavors to prescribe the shortest path of travel and to carry the work to that equipment and to those operations where it can be performed most economically. Thus, unnecessary handling, long haulage, and repetition of moving are eliminated. This aspect also takes into consideration the means of interorganization transportation. In some instances the chain belt is more advantageous and less costly, whereas in other instances either a hand truck or an electric truck is more beneficial.

After the two elements of planning and routing have been studied, scheduling and dispatching are considered. Scheduling is very important, especially with respect to products that are composed of several parts. In this case the production is scheduled so that proper sequence and priority are given, with the result that the various component parts will arrive at the assembling point at the same time. Under such circumstances delay in assembling is eliminated, with resulting less idle time on the part of the operators. Furthermore, scheduling makes allowances for emergencies and unforeseen breakdowns. When such breakdowns occur in the machinery, the work can be shifted from one place to another without seriously disrupting the schedule. Moreover, when a rush order is received, the schedule shows

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[4] "Handbook of Business Administration," W. J. Donald, Editor-in-chief, p. 605.

exactly where all work is and just where this emergency order may be inverted without disrupting the whole production system. These schedules control production for future periods of time, with the result that customers can be told accurately just when their orders will be filled.

Dispatching is the process of assigning work to definite work places and, where necessary, of accelerating or retarding its progress from point to point. In this way management can determine where certain work is at all times. Then, too, it determines what work has been done and what remains to be done on various orders. The dispatching of orders also accounts for the use and location of the tools and supplies.

Closely allied with these four elements of production control but not actually connected with any one of them specifically is the factor of inspection, together with maintenance of inspection stations. There is no truer statement than that defective and spoiled work is one of the causes and bases of high costs. Many industries maintain that they employ an inspecting system, but they fail to say when or at what stages of the production process. In a majority of cases the inspection is made after the product is finished and when it is ready to be sent to the shipping room. Such a system is not adequate, because the time to ascertain that a profit will be made or a minimum loss suffered is not when the work is entirely completed. Adequate

inspection should be maintained, and this consists of process and final inspection. In many factories,[5] losses of labor and material in spoiled and defective work are unwarrantedly high. Aggregate annual wastage of human effort and goods from this cause is very great. Furthermore, indirect losses, which are harder to detect and measure, are often greater than direct losses. Therefore, it is necessary to conduct an inspection at the end of each important phase of production, so that defective work will not be passed on with resultant loss and waste of both labor and material.

From what has been presented concerning the element of production control, it is clear that the factor of time is of vital importance. Conscious production control tends to reduce[6] or eliminate waste by shortening the time of production. This leads to reduction in idleness of material, of the workers who are to operate on it, and of the machines and tools which form the equipment for the processes it is to enter. Furthermore, in order to achieve speed,[7] production must first be controlled, and to do this, every factor bearing thereon must be considered. In this respect such factors as lighting arrangements and health conditions must be viewed as of great importance. Probably many people will not agree with me in this aspect and will claim that such factors are but incidental and of minor importance. Nevertheless, improper and inadequate lighting arrangements are

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[5] "Waste in Industry," Committee on Elimination of Waste in Industry of Federated American Engineering Societies, p. 25.

[6] "Waste in Industry," Committee on Elimination of Waste in Industry of Federated American Engineering Societies, p. 24.

"WASTE IN INDUSTRY" - COMMITTEE ON ELIMINATION OF WASTE IN INDUSTRY

OF THE FEDERATED AMERICAN ENGINEERING SOCIETIES - P. 9.

Industry Studied	Responsibility Assayed against Management	Responsibility Assayed against Labor	Responsibility Assayed against Outside Contacts (Public, Trade Relationships and Other Factors)
Mens' Clothing Manufacturing	75%	16%	9%
Building In-	65%	21%	14%
Printing	63%	28%	9%
Boot and Shoe Industry	73%	11%	16%
Metal Trades	81%	9%	10%
Textile Manufacturing	50%	10%	40%

Illustration No. 3.

From "Waste in Industry," Committee on Elimination of Waste in Industry of the Federated American Engineering Societies, p. 9.

handicaps to speedy production, because they occasion the source of delays incident to the losing and dropping of small parts. Furthermore, such poor lighting facilities often cause accidents. Mr. W. H. Heinrich[8] of the Travelers Insurance Company, in a determination of the percentage of industrial accidents resulting from physical causes, studied 73,000 cases where records were available either in the files of his own company or those of manufacturing concerns, and found that 10 per cent resulted from physical causes, 2 per cent were unavoidable, and 88 per cent were due to managerial and supervisory faults. When the health conditions are not proper much time is lost because of sickness. The result is very costly to the business. It, therefore, seems that the factors of lighting and health should be considered with regard to production control and the lowering of costs.

Another factor of prime importance from the viewpoint of time is the "economical lot."[9] The economical lot is the quantity which can be produced at the lowest unit cost, including manufacturing costs and carrying charges. When such a procedure is employed much time is saved and many costs are eliminated, for the tendency is to keep all products moving without any delays from one step to another. When the lot is too large there is apt to be congestion at one or more points of production; when it is too small there is likely to be idleness on the part of the employees.

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[8] "Recent Economic Changes," Rept. of Committee on Economic Changes, p. 143.

[9] "Handbook of Business Administration," W. J. Donald, Editor-in-chief, p. 617.

In the description of production control the subject of waste in materials has been referred to frequently. It is not necessary to deal with wastes due to faulty investment or sweeping changes in conditions but, rather, with operating wastes. These consist of wasted materials caused by carelessness in handling supplies, spoilage of merchandise or of work in process, and idle time of either personnel or equipment. The last is due to failure to coordinate the activities of various departments, poor scheduling, lack of definite standards of output, and to indifferent supervision. One of the chief findings[10] of a study of waste in industry by ex-President Hoover's Committee was that American industry suffers from an average waste of 49 per cent. Of this waste 84 per cent was held to be avoidable; and management was charged with responsibility for 68 per cent of the avoidable waste.

These operating wastes may be divided into four classifications[11] according to their causes: (1) low production caused by faulty management of materials, plant, equipment, and men--the result of improper planning and scheduling, as explained previously; (2) interrupted production caused by idle men, idle materials, idle plants, and idle equipment--the result of inadequate routing and dispatching, already discussed; (3) restricted production intentionally caused by owners, management, or labor--one of the worst offenses possible and, therefore, requiring

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[10] "Hammermill Survey of Business Practice," Rept. IV., p. 3.
[11] "Waste in Industry," Committee on Elimination of Waste in Industry of Federated American Engineering Societies, p. 8.

no further explanation; and (4) lost production caused by ill health, physical defects, and industrial accidents. To a great degree this loss is unavoidable, but some of it may be overcome by improving existing health conditions and lighting facilities. This waste must not be confused with salvaging or utilization of waste which has already occurred. Salvaging and utilization of waste are important, but more important is the prevention of waste. Evidence shows that production control is of much value when considered in the light of the elimination of waste in time and materials, thereby reducing the cost of manufacture and increasing the profits to be received.

Up to this point the explanation of production control has been considered in its application to business in general. This explanation has shown how the powerful mechanism applies itself to various phases of the production process. However, there have not been given any of the fundamental laws, considerations, factors, and functions which are connected with the system of production control and which may be derived from the material already given. The laws of production control which are derived from the preceding description are:[12]

1. Centralization
2. Assignment of work
3. Importance and availability
4. Operations
    a. Standardization
5. Labor
    a. Less skilled with less cost
6. Equipment
    a. Standardized
    b. Arranged in sequence

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[12] "Graphic Production Control," Knoeppel, p. 40.

7. Materials
    a. Availability
8. Lots
    a. Determination of the economical lot

Based upon these laws are the fundamental considerations which must be accounted for in production control. These consist of:[13]

1. Chief factors in processing
    a. Arrangement of plant and equipment
    b. Shop transportation
    c. Production methods
2. Elements subject to such a system
    a. Labor
    b. Material
    c. Operation
    d. Equipment
3. Functions of Control Mechanism
    a. Responsibility for planning, routing, scheduling, and dispatching
    b. Coordinate work of engineering, purchasing, cost, equipment, and manufacturing departments
    c. Work in conjunction with various departments
    d. Clearing house for all production data

A complete description of this very efficient system has been presented and the laws resulting therefrom pointed out. It remains to explain how this mechanism is applicable to practically any form of business. The value in obtaining and means of aiding in control of profits must also be described. For some time in the past this system of production control has been applied to the manufacturing industry without giving any consideration to the office. Today the situation is different. Not only is much more attention being given to its application in industry but

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[13] "Graphic Production Control," Knoeppel, pp. 56, 57.

also considerable emphasis is being placed on the necessity for control in offices and business of service. At the present time the office is receiving the critical scrutiny which in previous times was given to shops only. In the recent Hammermill Survey it was learned that the percentages of office costs to total general overhead ranged from 24 to 61,[14] depending on the nature of the business. Many organizations are convinced that there is a serious waste of time and effort in their offices and that such waste is very costly. In order to lower this cost and eliminate this waste of time and effort, methods of work are being studied, jobs are being analyzed and subdivided along new and more effective lines, training programs are being organized, and costs determined. All this is being done to make the office a more helpful factor in lowering costs and increasing profits. However, in doing this great care must be taken not to hamper the legitimate, essential, and profitable activities of the office.

The result of these studies by various organizations is that there are three causes of excessive clerical overhead,[15] viz.: (1) "frills" of all kinds; (2) obsolete functions once useful but no longer necessary to the efficient operation of the business; and (3) hastily planned routines and indifferent control of office work. At the present time it has become evident to various types of business organizations that these causes of excessive clerical expenses

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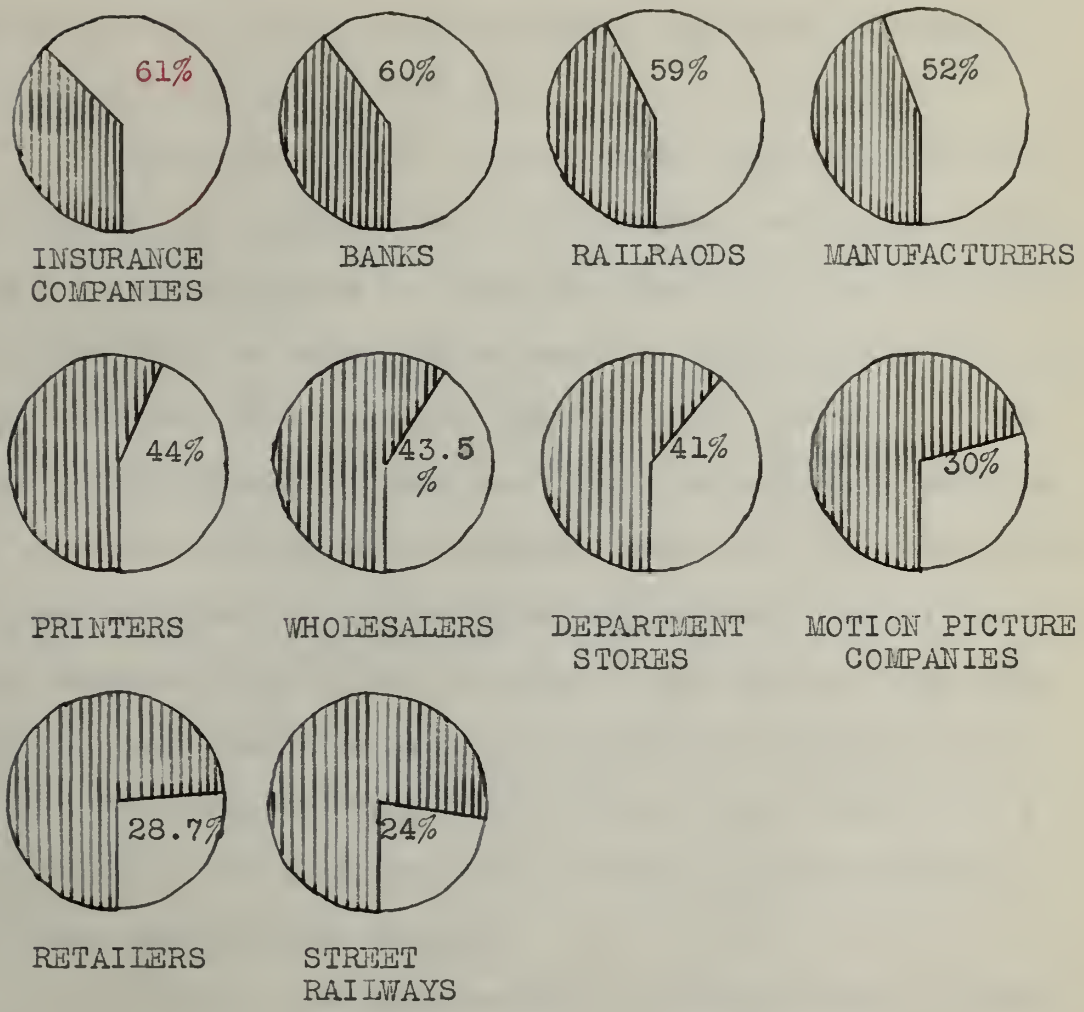
[14] "Hammermill Survey of Business Practice," Rept. III, p. 4.
[15] "Hammermill Survey of Business Practice," Rept. III, p. 6.

RATIOS OF OFFICE EXPENSE TO GENERAL OVERHEAD
IN MAJOR LINES OF BUSINESS



The graphs show what percentage of the general overhead in various lines of business consists of office expense. Under office expense are included administrative and clerical salaries, general office expense, and stationery and supplies, but not office rent, light, or heat. These graphs show clearly the major importance of office expense as a factor in general overhead; and they indicate the great possibilities for cutting overhead in most lines of business through increased attention to office and clerical activities.

Illustration No. 4.

From "The Hammermill Survey of Business Practice," Rept. III, p. 5

must be eliminated. To accomplish this task, office management has adopted methods which they term "office efficiency" or "office control."

These systems do nothing more than apply production control to another phase of business, and in so doing, a more scientific name has been adopted. With this system of control as its means, management is taking steps to eliminate obsolete practices and duplications. In some firms it has been discovered that one group is recording certain data for one purpose while another group will be tabulating the same information for a different purpose. Also, in some instances the duties of some of the office force were to record data which a change in systems sometime before had made valueless. Such practices not only constitute a waste of time but also account for undue office expenses which can and must be reduced.

Some of the methods used in offices were adopted years ago and at that time were adequate. However, the value of these methods is not so great today, and it is necessary for them to give way to modern practices. It is now necessary to plan office routines and to assign certain jobs to certain individuals. As a result, all work will be passed on from one person to another in systematic order and employees will not be infringing upon each other's work. For these reasons executives and managers have been applying production control to their office forces. The

A TIME-SAVING FORM FOR HANDLING CORRESPONDENCE

<table>
<tr><td colspan="3">CORRESPONDENCE INSTRUCTION FORM
Checked by</td><td colspan="2">Mail Received Date</td><td>Letter Number</td><td rowspan="13">Instructions for Answering:
Rush answer today
Answer before
Do not answer
Show me before mailing
Send me a copy of reply
Follow up
Return with suggestions
Acknowledge receipt only
Ask him to write later
Ask him to call
Investigating
Contrary to policy
Cannot do this
Avoid committing us</td></tr>
<tr><td colspan="3">Attached letters or papers to be routed to departments as below. Insert numbers in first column to indicate routing order.</td><td rowspan="2">Note and Pass on</td><td rowspan="2">Supply Information
(Check action desired)</td><td rowspan="2">Answer Letter</td></tr>
<tr><td>Routing</td><td>Department</td><td>Attention of</td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
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<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td></td><td></td><td colspan="4"></td></tr>
<tr><td colspan="7">Further instructions or request for information</td></tr>
<tr><td colspan="7">(This form reduces substantially the amount of unsatisfactory dictation. Also used for routing various reports and papers on which action is desired. It is an excellent example of a simple form which saves executive time, gives instructions, and speeds up work.)</td></tr>
</table>

Illustration No. 5.

From "Hammermill Survey of Business Practice," Rept. II, p. 10.

classification of the control method adopted is different from that given here, but the purposes and results are the same. The office force is just as much a producing unit as the factory, although the duties and results of the two are entirely distinct. The costs of operating the clerical force are united with the cost of manufacturing the product, in order to ascertain the price; and if the cost of the product must be lowered, it is necessary to reduce office costs as well as manufacturing costs. By making this cost reduction through the medium of production control, profits are automatically increased.

Lack of adequate methods of production control is evident in every industry. In a study made it was determined to be one of the outstanding weaknesses, for the following reasons:[16]

1. No dispatching stations for recording progress of work and giving out of work assignments
2. No work tickets and progress records for various manufacturing lots
3. No record of production, either of individual worker or operation
4. No record of the balance of work ahead at each operation or of plant as a whole
5. No systematic method of keeping the operators supplied with work
6. Congestion of work at some points; idleness at others
7. Shortage of needed accessories
8. Lack of research

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[16] "Waste in Industry," Committee on Elimination of Waste in Industry of Federated American Engineering Societies, pp. 12, 13.

NORMAL ROUTE OF AN ORDER

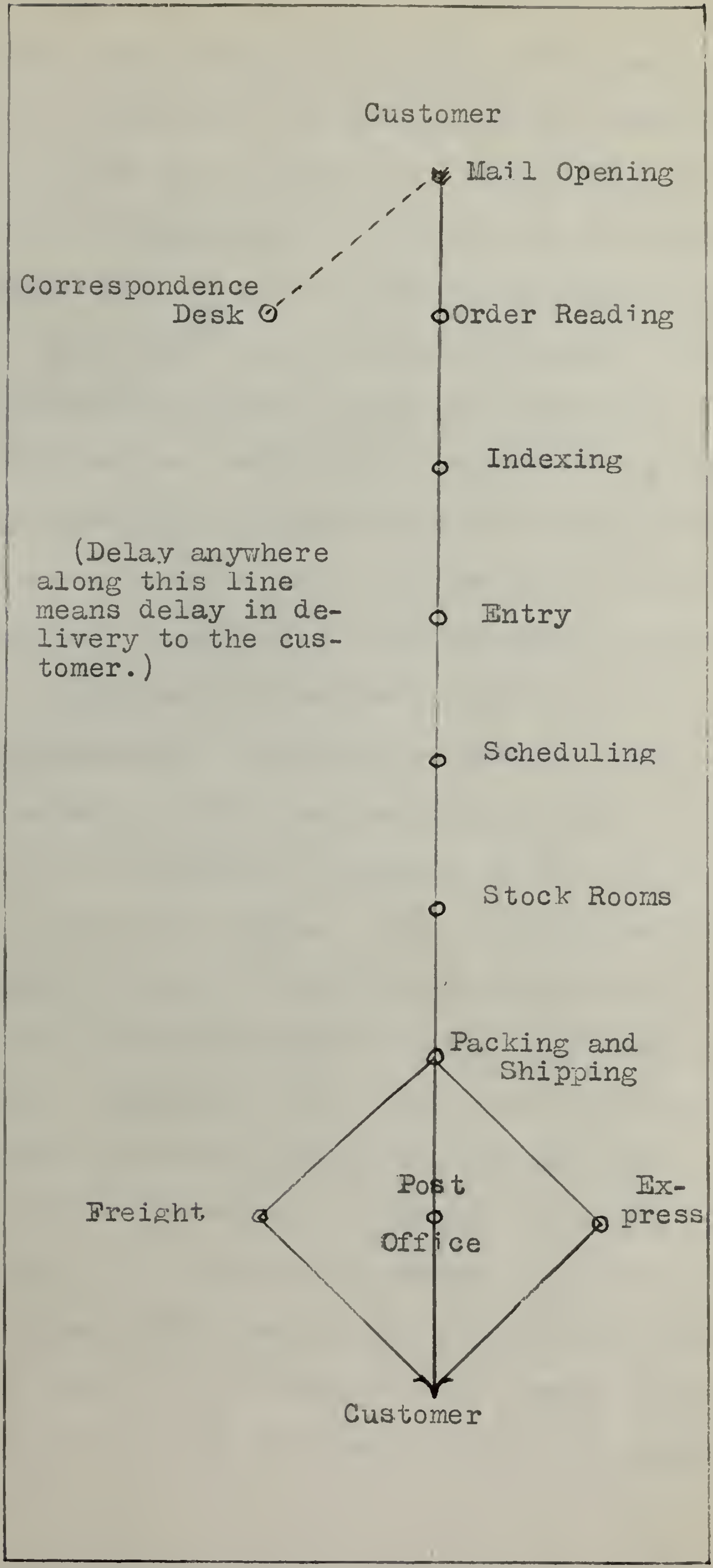

Illustration No. 6.
From "Hammermill Survey of Business Practice," Rept. VII, p. 9.

When these eight outstanding evidences of lack of production control are removed by applying the powerful mechanism of production control as advocated in this chapter, there will be an elimination of waste both in material and time, adequate service will be given, and costs will be minimized. As a result profits will be greatly affected, since the difference between costs and price will be greater. Furthermore, competitive manufacturing today necessitates lowering of prices, and this can be done only when costs are lowered so that profits will not be reduced. When dealing with competitive manufacturing in such a manner, it is necessary to maintain orderly procedure and controlled management. Moreover, service to customers, which has become a profit-and-loss factor, will be affected, so that it will be neither inadequate on the one hand nor too costly on the other hand. Also, by eliminating the losses caused by failure to use plant facilities to full capacity, or by avoiding delays and interruptions to the smooth flow of production, the extra profit between actual costs and possible minimum costs will be secured.

Besides affecting profits in the manner just indicated, production control will assist in bringing about the following possible results which touch upon profits either in a direct or an indirect way. These possible results, as noted from the "Handbook of Business Administration,"[17] are:

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[17] "Handbook of Business Administration," W. J. Donald, Editor-in-chief, p. 627.

1. Reducing material inventories, and thus cost of maintaining stocks, which is seldom less than 20 per cent of the investment and often as much as 25 per cent;
2. Balancing finished-goods inventory, which helps to accomplish No. 1 and also facilitates customer service;
3. Holding down work in process, which helps to accomplish No. 1 and also aids in using plant facilities to the fullest possible capacities;
4. Increasing material turnover, which also helps to reduce the cost of maintaining material inventories and improves the financial position of the company;
5. Using plant space, equipment, and facilities to the fullest possible capacity, which holds down capital investment and secures greater earnings on that already invested;
6. Holding down investment in tools, jigs, and fixtures, which does the same as No. 5;
7. Helping to meet standard costs--a dollar saving.

CHAPTER III.

BUDGETARY CONTROL

The term "budget" holds a prominent place in the history of management, owing to the publicity which it has received during the past two years. Practically every newspaper and magazine in the country has featured articles concerning the efforts of national, state, and local governments to balance their budgets. Budgeting, however, is not an innovation, as its recent prominence might lead many to believe. For the past twenty years budgeting has been used widely in many types of organizations, but it is practiced today more extensively than ever before.

"Budget" is derived from the French word "bougette,"[1] which refers to the financial statement annually made in the House of Commons by the Chancellor of Exchequer. In December, 1921, the first budget of the United States[2] was submitted to Congress, under a new system of conducting the government's finances based upon a law passed the same year. It was impossible to do this before because of the division between the legislative and the executive branches of the government. However, before the national government adopted this system, many municipal and state governing bodies had realized its value and had put it into practice. The first group actually to apply this control of finances was the municipalities, and they did it in an effort to reorganize and centralize responsibility. There was a great need not only to bring expenditures under responsible control but

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[1] "Adair's New Encyclopedia," Vol. I.
[2] "Adair's New Encyclopedia," Vol. I.

also to keep them within the limits of estimated revenues. The success of the system in these various municipalities led to its adoption by the states and then by the national government.

Gradually, because of the apparent success obtained by the three forms of government organizations, several lines of business employed this system of controlling incomes and expenses. In many ways local, state, and national government organization is similar to industrial organization, and in both it was found to be necessary to bring expenditures under responsible control. The government made the experiment first with a great deal of success. The result was that industry followed very promptly. However, a tremendous number of firms did not adopt this control method at first; but during the past three years most of them have seen the necessity for controlling expenses and operating upon a greatly reduced income. They, consequently, have by now adopted the budget-control system. The trend of adoption has been so great and the control value is so apparent that at the present time credit managers of banks are demanding that budgets be drawn up by those firms that have borrowed or intend to borrow money. The reason for making this demand, according to credit managers, is because industries employing such a system are in a far better position and know more about their current position than those who do not use budgeting.

In government, budgeting has resulted from efforts to reorganize and centralize responsibility; in business, it has resulted from the necessity of readjusting and stabilizing industry. However, there is a difference between budgetary control as applied to government and as applied to business. Municipal budgets are restrictive and rigid, whereas industrial budgets are flexible and suited to meet changing conditions. It is the latter type of budgetary control that is to be considered throughout this chapter.

Budgetary control in any industrial enterprise may be defined as:[3]

1. the assembly of information that may have an effect on the operations of the business during a stated ensuing period;
2. the application of this information in forecasting trends and formulating a program;
3. the use of the program currently for measuring operations.

This definition is very adequate. It outlines the three major steps sufficiently. Nevertheless, another explanation which was given at an industrial conference in Geneva is well worth quoting:[4]

"Budgetary control is a method of rationalization whereby--

Budget	estimates covering different periods of time are, by the study of statistical records and analytical research of all kinds, established for all and everything affecting the life of a business concern which it is possible to express in figures:

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[3] "Budgetary Control in Manufacturing Industry," National Industrial Conference Board, p. 11.

[4] Editorial of "International Management Institute," July, 1930.

Control	These established standards are constantly revised and checked for the periods determined, in the light of actual achievement; with the double purpose of correcting the estimates, and of initiating the investigation and correction of causes of discrepancies."

This definition explains the relation between the terms "budget" and "control." It points out, furthermore, the exact purpose of budgetary control, namely, to control expenses. One of the prime steps in obtaining this result is to weave various departments of the business into one flexible whole and thus insure, whenever adjustment is called for, that all departments will bend at the same time and in the same direction.

The entire budgetary-control system is comparable to the compass on a ship. Just as the captain depends on the compass for his course and the safety of the ship, so the executive depends upon this powerful system as a guide and a means of avoiding losses. However, in maintaining this attitude one must not assume that budgetary control means establishing a fixed program and following it blindly with no regard for circumstances not foreseen at the time the budget was established.

This system is not a prescription to be applied on short notice; nor is it a cure-all. It is but a part of the machine of management, and if this machine is to operate satisfactorily, each part must first be in its related place. These basic parts are:[5] a proper organization, an adequate accounting system, an accurate cost

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5. "Budgetary Control in Manufacturing Industry," National Industrial Conference Board, p. 16.

system, statistics of past operations, and provision for an intelligent budget supervision.

The budget should be drawn up by a committee or budgetary board composed of the executives of the business and the general foremen of each phase of the business. The requirements and capabilities of their respective departments are known well by the foremen. Then, too, they represent the employees who are under their management. They, therefore, can easily determine whether too much is expected of their particular department, and can offer suggestions for remedying an unjust situation. To insure prompt preparation and satisfactory administration of the budget, one individual should be delegated as supervisor or director. His qualifications may be summed up as follows:[6] common sense, good judgment, leadership, faculty of teaching other men, and familiarity with the administrative and operating problems of the business. Besides arranging the budget, this board will make all adjustments and corrections where necessary, and will advise, direct, and support the budget executive.

This control system is planned for a specific period in the future. It is not good practice to make an elaborate program covering a long period in advance. It is far better to maintain at all times a budget under general headings for the ensuing year and, in addition, to develop a detailed budget for from three to six months ahead. This latter program is broken down into operating

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6. "Budgetary Control in Manufacturing Industry," National Industrial Conference Board, p. 38.

periods of a month and a week. It is upon these plans that all production operations are based. In this respect all budgets are similar, but the procedure in arriving at them and in carrying them out varies according to the organization of the business and the nature of its operations. A possible procedure is:[7]

1. Each department prepares an estimate of its activities for the budget period

2. Each department transmits these estimates to an executive who has supervision over budgetary procedure
   (The financial statement results from this.)

3. Estimated receipts and expenditures are compared:

   a. reduced departmental expenditures
   b. additional receipts secured
   c. additional capital secured

4. Estimated operating statements are made

5. Budgetary board asks for final estimate

6. Departments plan accordingly

7. Records are established for checks

Before proceeding with this possible plan the sales estimate of the ensuing budget periods must be secured, for it is thereon that all departmental plans are based. This sales estimate is based on[8] past experiences, present conditions, and future possibilities. A knowledge of the results of past experience is obtained from an examination of comparative financial statements and reports

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[7] "Budgetary Control," James O. McKinsey, pp. 5-8.
[8] "Business Regulation of Budgetary Control," Louise M. Mulhern, p. 22.

of past activities. These reports show the trend of the particular business during past years on both a volume and a dollar basis. These statements should be complete up to the time the budget is being prepared. The information of present conditions is acquired from statements prepared as of today. Furthermore, observations concerning the business activities in existence during the present time are valuable aids as basic information. Future possibilities are obtained from the judgments of the executives, especially the sales manager. These judgments are based on the market trends of the past few years and on the present position of the business cycle. The reports and analyses of statistical and research concerns are also necessary in determining future possibilities. From this information the budgetary board determines the expected sales quota for the ensuing year. It is upon this figure that the rest of the plans of the organization are based.

The departmental estimates are determined with the aid of predetermined costs. These costs are obtained by means of cost and time studies, both of which will be explained in the chapter devoted to cost control. As a result of these studies, the executives and department manager determine the unit cost of production. When this is known, it is not difficult to estimate the cost of producing the volume desired. In this way the expense of operating each department for the budget period is ascer-

COMPARATIVE OPERATING STATEMENT

(Items, Departments, or Activities)	Month of	----	Months to Date	
	Budget	Actual	Budget	Actual

(This statement provides a comparison of actual accomplishment with budgetary estimates. It may be prepared for each department, for the business as a whole, or for activities desired.)

Illustration No. 7.

tained. Consequently, each production unit is notified as to what is expected from it during the ensuing period. The foreman is also shown the estimated expenses of operating his department during such a period, and it is his duty to remain within that estimated figure. From this estimate, also, a weekly schedule is prepared, and then a daily schedule; and from this the labor and equipment needs are determined. As a result of this budget, information is provided about every unit of the business and its ratings in regard to estimated plans.

Oftentimes during the passing of the budget period some unforeseen variations occur which require correction. Weekly reports are sent to the budgetary board from each department manager. Comparisons are made between these reports and the estimates and, where a department exceeds its estimate, an investigation is made to determine the causes and make corrections. This procedure fixes the responsibility for excessive costs and points out deficiencies in performance and forecasting. In some instances a revision of the budget will be necessary owing to unexpected conditions arising. In such instances the most important point to watch is the volume of actual sales orders. If this varies much from the estimates as set up in the sales budget, the latter may need to be revised and production curtailed, with accompanying decrease in direct labor, material, and expense, so as to permit the obtaining of the budget profit.

This exemplifies the flexibility of the budget. During past years[9] quota figures were often knowingly set too high, on the theory that they acted as a spur to the salesmen. The present method is to set them at a level which the sales manager honestly expects will be reached, instead of at what he hopes may be reached. A company that errs in its forecasts will probably either overstock with goods that cannot be sold at a profit or understock and forfeit profits that might have been made if the goods had been available.

In order to gain predetermined goals, it is necessary to make frequent comparisons between the budget and actual performance. In so doing, all figures are obtained from records or forms. These forms are an essential part of the system because it is therefrom that all the statistical data are secured. In drawing up these forms it is important to provide for all required statistics. If this is not done, the reports may contain superfluous or inadequate information, both of which result in waste of time. These forms are prepared by departments and cover activities over a designated length of time.

The following report system is maintained by most businesses; the reports for both estimated budget and actual performance are listed according to period:

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[9] "Budgetary Control in Manufacturing Industry," National Industrial Conference Board, pp. 84, 85.

Budget	Actual Performance
1. Master budget	1. Master report
a. Period of a year	a. Period of a year
b. Prepared by budgetary board	b. Prepared by accounting department
c. General headings	c. General headings
d. Covers all departments	d. Covers all departments
2. Semiannual budget	2. Semiannual report
a. Prepared by budgetary board	a. Prepared by accounting department
b. Detailed headings	b. Detailed headings
c. Covers all departments	c. Covers all departments
3. Monthly budget	3. Monthly report
a. Prepared by budgetary board	a. Prepared by department manager
b. Prepared according to departments	b. Prepared according to departments
c. Covers departmental details	
4. Weekly budget	4. Weekly report
a. Prepared by department manager	a. Prepared by department manager
b. Detailed estimates	b. Prepared according to departments
c. Prepared according to departments	c. Detailed activities
5. Daily budget	5. Daily report
a. Prepared by department manager	a. Prepared by department manager
b. Detailed estimates	b. Prepared according to departments
c. Prepared according to departments	c. Detailed activities

These budget reports are arranged either on an expense and income basis or on a volume basis. In most cases the arrangements are made on both these bases. The financial statements must not be associated with these budgets, because they are entirely separate. Each one of the described budgets is definitely related to the others;

Daily Summary

________________ 19 ________

	Today	Total for Month to Date	Total for Year to Date	Total for Month this Date	Last Year Total for Year this Date
Cash on Hand					
Accounts Receivable					
Accounts Payable					
Sales, Dollar Volume					
Sales, Number of Units					
Shipments, Number of Units					
Production, Number of Units					
Unfilled Orders, Number of Units					
Stock on Hand, Number of Units					

Remarks:

(This daily report reveals all essential facts regarding a business. The data from which this summary is made are available at all times.)

Illustration No. 8.

From "Hammermill Survey of Business Practice," Rept. I, p. 5.

similarly the reports on actual performance are likewise related. There may also be other supplementary reports used which, though essential, are not so important.

This system of budgetary control is adaptable to any type of business. It does not matter whether the business is manufacturing or non-manufacturing. As a matter of fact, practically everybody uses this system to some degree. Most every one who has an income and a personal estate uses budgeting in order to balance expenses with income and simultaneously make provision for saving. Many financial houses when making loans demand that a budget be arranged and maintained, so that there will be security for their loans. Several things may be accomplished by budgeting office expenses but, in working out the plan, the purposes must be clearly kept in mind. The budget can be designed[10] to serve as an aid in controlling the financial policy of the company. It can also be constructed to serve as a measure of work done by individuals or groups of individuals by specifying expectations and by providing a comparison between actual and expected results. It can be made to serve as a coordinator of the plans of the various units of a company and as a part of the general planning of work that should be done in each organization.

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[10] "Handbook of Business Administration," W. J. Donald, Editor-in-chief, pp. 1005, 1006.

The values of budgetary control are evidenced wherever the system is in adequate use. As has been explained, the system itself is not a cure-all but, rather, a guide for management's use in conjunction with the other major control methods. This system, by itself, cannot accomplish the impossible. By estimating for a year in the future and then breaking down the period of time into semiannual, monthly, weekly, and daily periods, the managers of the various departments can soundly plan their work. When comparisons are made between actual performance and the forecast, the discrepancies are easily discernible and the points where excessive costs originate are located. It is to these points that the attention of the budgetary board is drawn, so that proper steps may be taken to correct excessive costs. It is these undesirable costs that budgetary control either wipes out or decreases. When this occurs, the cost of production is lessened, with the result that profits are increased. Such corrective measures also strengthen the ability of the business to meet its competition.

Besides locating and decreasing excessive costs with the result that profits are directly affected, budgetary control also aids in lowering the costs of production per unit. This results from the ability to maintain a more adequate check over the activities of each department. When the cost per unit can be reduced, it is only

Planning for Profit Chart

(With the aid of this chart the budgetary board is able to determine the cost of producing various volumes and can thereby plan for profits.)

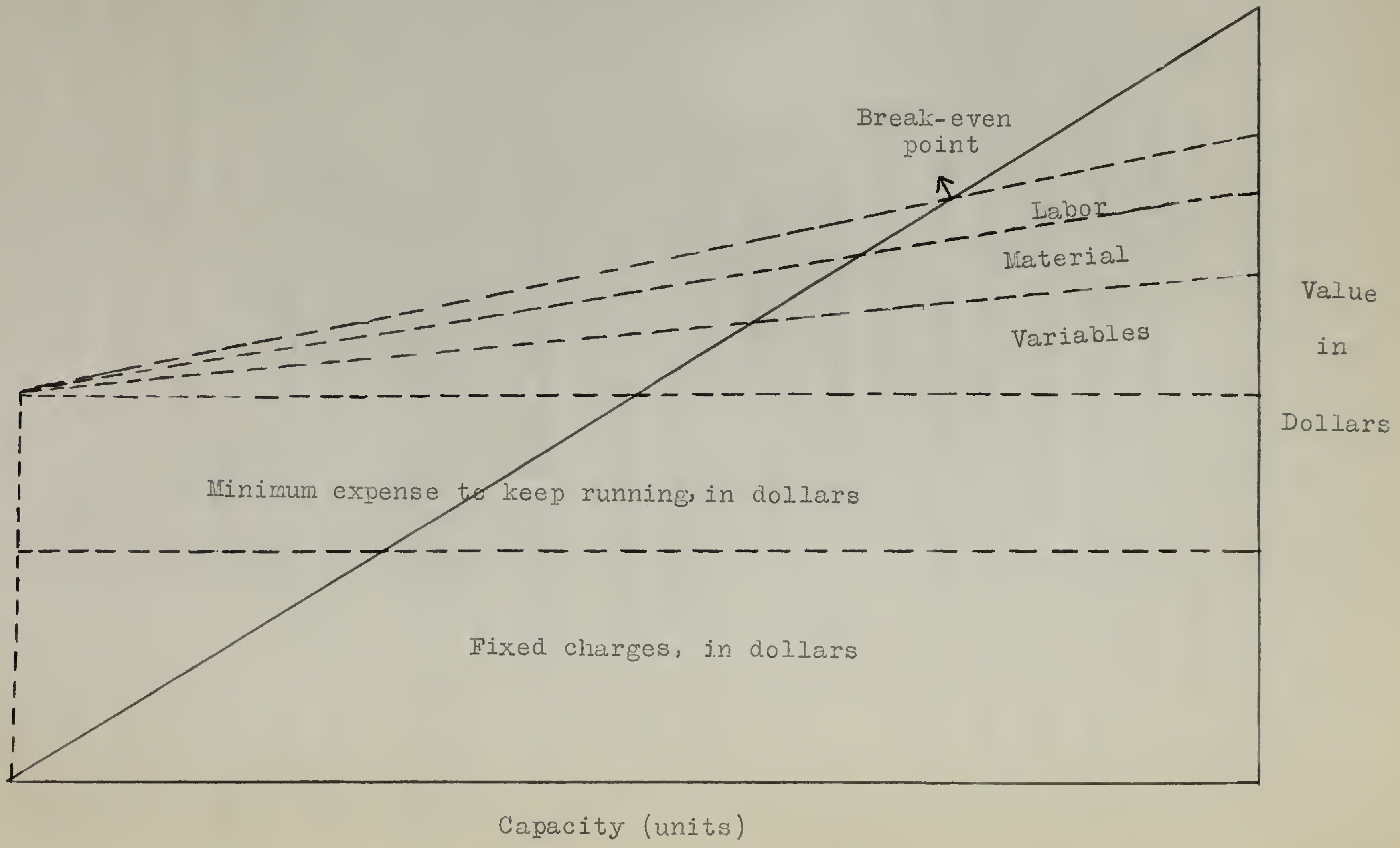

Illustration No. 9.

natural that the benefits received in the production as a whole will be great. With such a situation existing, it is obvious that profits will be increased. Costs must be decreased in order either to maintain or increase profits. At a conference held during July and August, 1930, various executives cited the benefits that could be expected and would result from the use of budgetary control. Some of these are:[11]

1. Cost reduction and better control
2. Coordination of the plans for various departments
3. Overcoming of any tendency towards unnecessary or excessive expenditures
4. Governing of expenses and securing of profitable operation
5. Increased production and constantly reduced manufacturing expenses
6. Elimination of waste of effort, stabilization of employment, allowance for better use of current funds, reduction in expense, and increase in profits

Not only does budgetary control affect profits in the manner just stated but it also aids in planning profits for the year. This is accomplished by calculating the volume necessary to obtain a profit. By means of cost and time studies, the minimum expense of keeping the business running is determined. As a result, the volume necessary to cover this expense is known. Also, the cost of production per unit is determined, and when the budgetary

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[11] "Budgetary Control in Manufacturing," National Industrial Conference Board, pp. 149, 150.

board forecasts for the future, it is easier for it to ascertain whether the volume planned is large enough to cover expenses and at the same time show a substantial profit.

CHAPTER IV.

COST CONTROL

The stress of unfavorable business conditions, coupled with guesswork about costs, is proving embarrassing to some industrial groups. Individual operators decry the practice of competitors of taking business at less than cost, but they make comparisons in the light of their own costs and not those of the competitor who may have an efficient plant which enables him to do a profitable business at a lower cost, and who may have an adequate cost system which enables him to know what he is doing. Unless an industry has developed and adopted uniform methods of cost determination, no individual operator is competent to judge the practices of his competitor in the light of his own cost records only.

Although cost control is as old as business itself, it is still finding new applications, and its methods are being adapted to the ever-changing demands of industry. In spite of this fact, the present situation indicates that many business leaders have failed to appreciate what adequate cost-finding methods can reveal regarding the operation of economic forces within their own businesses. The business man who carries the details of his own business in his mind and on scraps of paper in his pocket has no place in the present economic order. When products were few in number and margins of profits were ample, there was little demand for analytical study

of detail. The small business could be conducted without giving much attention to record-keeping or the study of costs.

The adherence to such practices is entirely inadequate for present-day business requirements. Business is conducted on a larger scale; consumers' demands become complex, requiring the production of great varieties of products in varying degrees of quality, and in numerous styles, colors, shapes, and sizes; competition for markets becomes a veritable struggle for existence; and profits are reduced in many instances to zero, or to negative quantities. These factors assume proportions which demand decisive action. Dependence upon opinion and past experience leads but to further confusion. Now, as never before, management demands accurate knowledge. It is in supplying this demand that adequate cost control affords an effective tool for the functioning of management, since accurate knowledge leads to establishment of sound policies.

To the manufacturer and producer, prices and costs are important elements concerning which present and future knowledge are essential. Costs of operating business are uncertain and are influenced in greater or less degree by the two uncertain elements of material and labor. Moreover, the ever-changing structure of business requires outlays of funds which were not required in the past.

During those periods when unstable commodity price levels restrict markets through curtailments of consumer de-

mand, proper pricing is an important factor in stimulating demand. When formulating pricing policies for the individual concern, unit product costs, as reflected through proper methods of cost control, serve as practical guides.

It is not practicable to consider the subject in detail, because of the varying nature of the cost systems in use, nor is it feasible to attempt the statement of specific rules of procedure. One company[1] may make the quantity produced carry all the burden, irrespective of whether the plant is operating full time or part time and whether the quantity is normal or otherwise. Another company may load more of the burden on certain products which have a wide margin of profit and less on those which do not. And a third company may use a more scientific basis of distributing its overhead burden, such as machine hours or labor hours, The fact of importance here is that costs have been determined, so that proper control is maintained over expenses.

It is not a new principle that costs are best controlled by comparing them with some standard measure or value. It is necessary to know how much a thing should cost before any decision can be made that the cost is too much. Therefore, the first step in a cost-control program is to predetermine and establish unit standards of selling expense to which actual disbursements and costs may be compared in order to find out whether they are excessive, and, if so, to what degree and the reasons therefor. These

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[1] "Budgetary Control in Manufacturing," National Industrial Conference Board, p. 34.

STANDARD COST SHEET NO.

Date
Figure
Revised
Revised

Article
Drawing

	Item	Quantity	Cost per Unit	Extension	Revisions		
					Extension	Extension	Extension
Material							
	Total Material Cost						
Direct Labor		Hours	Rate				
	Total Labor Cost						
Overhead		Direct Labor	Rate				
	Total Overhead Cost						
	Total Standard Cost						

Illustration No. 10.

From "Cost Accounting through the Use of Standards," Chamber of Commerce of the U.S., Dept. of Manufacture, No. 1024, p. 18.

standards cannot be picked out of thin air; but they can be determined in a usable form only by careful analysis of the sources of expense. No standard should be merely the average of past expenses, but should be developed by analysis of the efficiency with which the work is performed in the light of what expenses should be under present or forecasted conditions.

In establishing these standards, time studies are oftentimes necessary to determine the manufacturing costs. By means of these studies the expenses incurred by labor, time, and power are obtained. These expenses are flexible and subject to the prevailing rates of wages and power. They may, however, be established within the range of probability, and when once determined, the cost per unit is logically ascertained.

The cost-accounting department is responsible for the recording of all the data referring to these predetermined costs, and from these data the standard cost per unit is fixed. From these data also this department determines the probable cost of an order and can thereby tell if the order is profitable. The cost department likewise establishes the economical lot of manufacture, so that set-up costs will be reduced and too frequent changes in operations eliminated. A further and important duty of the cost department is to make at frequent intervals a comparison between standard unit costs and actual unit costs. As a result of this comparison the variations from the standard are located and investigated.

A majority of industrial plants[2] studied by the Committee on Elimination of Waste in Industry lacked a knowledge of costs and had no cost control. These plants had no method of judging fairly and accurately where improvements were needed and when waste was occurring. Prompt correction of defects was being prevented because facts were not being obtained properly. The lack of a good cost-control system is necessarily a source of much waste in controlling production and in judging when and where progress and improvement are being made.

It is of important significance[3] that in the face of recent competitive conditions, and in spite of substantial reductions in commodity price levels, wage levels have been generally maintained. This is an indication that industry, through its methods of cost control, and by increasing the efficiency of men and machines, has been able to reduce its costs by eliminating wasteful practices. Cost control is aimed directly at the person or function responsible for the excessive expenses, with the result that more work is obtained from the employees at a lower cost. This, in turn, makes the profit margin more substantial.

The time studies used as a basis for the standard costs of the control system point out where unnecessary movements which result in waste of time occur. When this

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2. "Waste in Industry," Committee on Elimination of Waste in Industry of Federated American Engineering Societies, p. 13.
3. Bull. No. 42, Chamber of Commerce of the United States (Series U.C.A. 3), p. 1.

situation is corrected by the application of the control system, the manufacturer receives more work from his employees and equipment, and the result is that costs are lowered. Whenever costs are lowered, the industry either receives increased profits or is better able to meet its competition.

Only through proper cost control can the manufacturer determine the line dividing profit from loss on his individual products, and ascertain which of his products, because of their profit possibilities, should be emphasized. Fast-moving products must be separated from slow-moving products, because the more rapid a product sells the smaller the profit margin necessary. Consequently, the costs of manufacture for the individual product must be accurately determined so that proper prices may be maintained.

Public interest[4] has been stimulated by several investigations conducted by public officials, which have been directed toward consideration between production costs of specific products and their prices to the consumer. These investigations have called attention to the definite upward trend of distribution costs in industry. The costs of distribution are too high and must be controlled. Studies already made show that these costs can be controlled more effectively by making adequate analyses which tend to disclose unprofitable methods. Standards of distribution can

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[4] Bull. No. 45, Chamber of Commerce of the United States, p. 2.

be maintained just as effectively as standards of manufacture, and by doing so, excessive distribution costs will be eliminated, with the result that selling prices will be more attractive to the consumer. Under such circumstances a larger market will be had with a resulting increase in profits.

With a cost-control system based upon standard or predetermined costs, emphasis is placed on those vulnerable points in factory operation where failure to attain or exceed the standards will mean loss or inadequate profits. The executive receives the significant variations from the standards instead of the full range of operating statistics. Consequently, the executive can place his attention on the variations pointed out. With corrections made in these instances, more production with less cost can be obtained.

CHAPTER V.

INVENTORY CONTROL

During recent years it has not been uncommon for working capital of manufacturing industries to be tied up unnecessarily in inventories, because of the fact that raw and finished materials were out of balance with sales and production requirements. An actual control over inventories, not only as to quantity of stock but also as to turnover and movement of slow stocks, is desirable and, in fact, necessary for profitable operation, irrespective of whether it is part of a budget system. This tie-up of working capital must be corrected, and in so doing a systematic procedure must be followed. It is not possible to have all working capital free and liquid, owing to the maintaining of the required inventory. However, the practice of carrying an excess amount of this capital in inventory can be corrected in a beneficial manner.

Inventory control is not only an instrument of management but also a guide to management, in exactly the same manner as the other control methods are. However, this system is dependent upon both production and budgetary control for its successful operation. The budget shows the exact nature of work to be done during a specific period, and from this information the materials department knows the amount of raw material that will be needed. Production control shows just when and where the material will be needed, and if the inventory department is not able to

fulfill this need, the entire production schedule will be disrupted. This control over inventory does not deal with raw material only but also with work in process and finished goods.

In an article entitled, "Why I Do My Company's Buying," appearing in Nation's Business of August, 1932, Mr. C. D. Garretson says, "In normal times, buying is just as important as selling, and in times like this, when so many sellers have the jitters, I am convinced that buying is more important."[1] Every order sold has a tendency either to build up or demoralize the future of a business. The same is true of buying. Giving a purchasing order to the lowest bidder is the cheapest way to buy, but in practice the most wasteful. It costs more to force every seller down to the lowest possible price than to pay a reasonable profit to the supplier of materials being bought. By confining all purchases in a certain line to one concern, the purchasing agent can get better results. It has been proved in several cases that prices have been lower than by the old method (forcing low prices) and that manufacturers sometimes voluntarily lower prices. The lowest possible price is often misleading and frequently may be costly to the buyer because of low quality and poor workmanship. It is a bad policy to try to get a lower price on bidding than on the previous order. The price paid is low but the method used to obtain this price accumulates a lot of

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1. "Nation's Business," August, 1932: "Why I Do My Company's Buying," C. D. Garretson, p. 23.

expensive correspondence and causes losses due to delayed work, freight expense, mistakes, and lack of technical advice.

Reciprocity buying should not be tolerated, because it encourages price cutting, which undermines business in general. It also encourages selling below cost and often results in the receiving of goods of inferior quality. In regard to small purchases, correspondence often amounts to 20 per cent,[2] 10 per cent of which can be saved by using a convenient market. By means of scientific buying, business conditions can be controlled.

The inventory phase of business is recognized as one of industry's major problems. An adequate solution of the inventory problem holds forth a promise of greater profits. When the means of controlling inventories is being determined it is necessary to consider the elements of purchasing and selling. Both these elements are prominent factors and must be figured as being subject to the control system to be employed. Perpetual inventory takes into consideration these two elements and is a system that adequately controls all materials. When such a control method is used any executive can receive at a moment's notice the amount of inventory on hand. Perpetual inventory is also an adequate check and tends to keep all materials within designated limits. However, if the system is not complete and used efficiently and accurately, all bene-

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[2] "Nation's Business," August, 1932: "Why I Do My Company's Buying," C. D. Garretson, p. 23.

fits will be missed. It should be governed by the following principles:[3]

1. There should be at all times sufficient stock on hand to satisfy customers' demands if such demands are consistent with the capacity of the factory.

2. There should not be larger stocks on hand than can be turned over in a period necessary for the production of a similar quantity unless such quantities do not constitute an economical run.

3. Goods should be produced in quantities large enough to insure economical production.

In addition to these principles, perpetual inventory requires initial consideration of:[4] (1) the production period; (2) the probable sales; and (3) the margin of safety.

Whenever a purchase or sale is made a voucher is sent to the inventory department and either an addition or a deduction, as the case may be, is made to the amount of the item or items affected. If the total figure of the stock on hand goes below the margin of safety, the production department is notified; if the figure goes above the maximum point, the purchasing department is notified. By this method stock is maintained within a limited sphere, needless purchasing is eliminated, an adequate supply is maintained for customers' needs, and a more satisfactory

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[3] "Economic Control of Inventory," Joseph H. Barber, pp. 17, 19.

[4] "Economic Control of Inventory," Joseph H. Barber, p. 19.

INVENTORY CONTROL

PERIODIC REPORT ON MATERIALS BUDGET

Items	Estimated Purchases	Actual Purchases	% of Increase or Decrease	Estimated Inventory	Actual Inventory	% of Increase or Decrease	Comments

Illustration No. 11.

From "Budgetary Control," James O. McKinsey, p. 161.

turnover is effected. However, in gaining these efficiencies, this control system must not be allowed to drift. There must be an intelligent adjustment at frequent periods. Few industries can claim freedom from seasonal fluctuations in the demand for their product or from business-cycle variations in the relative intensity of their product demand. These adjustments are accomplished by comparing physical inventories with the records to ascertain that they agree, and by comparing actual activities with the planned estimates. The trends of inventories, when they are under complete control, show the activities of the business itself. Increasing inventories reflect either excessive production or excessive purchases. Decreasing inventories may suggest either excessive demand or ineffective adjustment of production to increased demand. By their nature inventories should be constantly undergoing depletion and replenishment.

In conjunction with this system of perpetual inventory, the policy of determining the maximum and minimum points of supply should be used. This policy is made a means of controlling inventory by many concerns. By itself, this policy provides an efficient means of controlling materials, but when used in conjunction with perpetual inventory, it is more effective. The minimum point refers to the lowest possible figure to which the supply may be allowed to drop without affecting customers' service or the production schedule. It is a point which is

Stores Record Card

Article________________________ Size ________

Description________________________________

Stock to be Carried Order in Lots of______ Danger Limit______

Ordered			Received					Withdrawal			Balance	
Date	Req. No.	Quantity	Date	Req. No.	Quantity	Net Price Deliver	Per	Date	By Whom	Quantity	Date	Quantity

Illustration No. 12.

"Planning Production for Profit," John H. Van Deventer, p. 92.

equal to the quantity of sales occurring in the production period, plus the margin of safety.[5] A margin of safety is established because probable sales may be oversold, and strikes, breakdowns, and delays in deliveries of raw material may interfere with the normal course of production. The maximum point is the figure over which the supply of materials should never go, because if such a point is crossed, the turnover of materials will be unprofitably decreased. Inventory should be kept within these maximum and minimum limits at all times. While keeping the supply within these points, the business should endeavor to keep the materials on hand as near the basic stock level as possible. The basic stock level[6] is the standard level of stock that will give a standard rate of service under standard orders conditions, standard shipment conditions, and standard production conditions.

Some sorting of items into staples _versus_ slow-moving items, and popular _versus_ unpopular sizes must be made in order to maintain an intelligent control system. In the case of slow-moving items and in certain other cases, the minimum stocks to be carried may be determined by factors other than the rate of sales. It is preferable to allow them to be determined by an executive. The reason for sorting items in this manner is because there is a distinct difference between the rates of turnover among them. The result is that the stock on hand for slow-

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5. "Economic Control of Inventory," Joseph H. Barber, p. 20.
6. "Economic Control of Inventory," Joseph H. Barber, p. 71.

Merchandise Control Chart

Department No.

Six-month
Merchandise Plan

Spring 19__
Fall

Season Turnover Last Year This Year		Feb. Aug.	Mar. Sept.	Apr. Oct.	May Nov.	June Dec.	July Jan.	Total
Sales	Last Year							
	Planned							
	Adjusted-Plan							
	Actual							
Stock 1st of Month	Last Year							*
	Plan							*
	Adjusted-Plan							*
	Actual							*
Purchases	Plan							
	Adjusted-Plan							
	Actual							

Remarks:

*Stock, End of Season

(This chart aids in controlling inventory and shows the turnover being obtained.)

Approved: ______________ Mdse. Manager

Signed: ______________ Buyer

Approved: Controller

Approved: Manager

Illustration No.13.

Typical Purchase Transaction

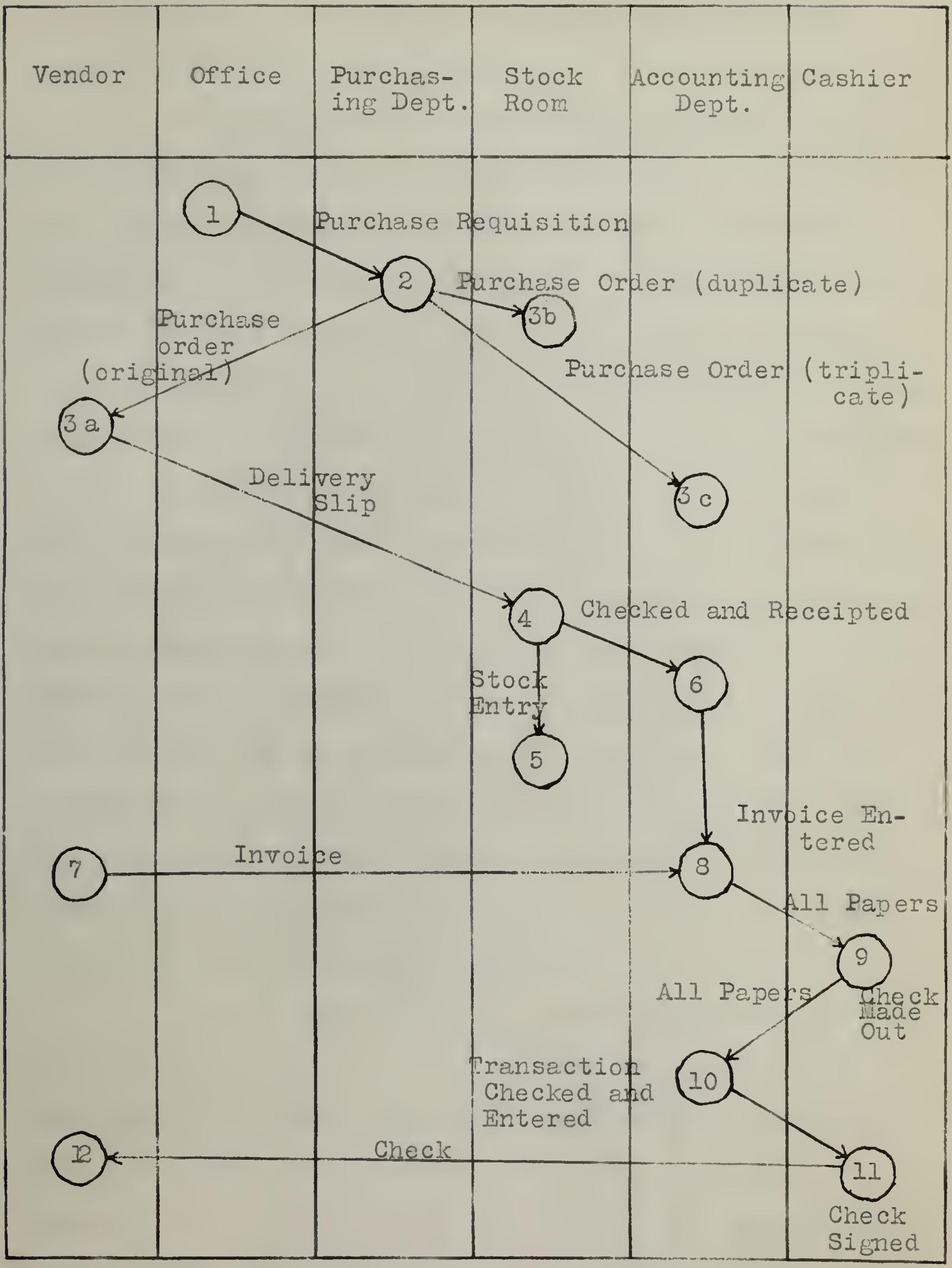

Illustration No. 14.

From "Hammermill Survey of Business Practice," Rept. VII, p. 9.

moving and unpopular items should be limited so that there will not be any danger of tying up capital and causing losses by obsolescence.

Inventory control should not be considered as being adaptable only to the industrial type of business but, rather, to any type of business which maintains an inventory. It is just as necessary to keep control over office supplies as over raw materials, work in process, and finished products. Many large institutions, such as banks, find it beneficial to maintain a supply department so that wastage will be kept at a minimum. Materials, such as stationery and office supplies, are essential to the operation of a business and are generally included in the overhead expense. If this overhead expense is to be reduced, it is necessary to make every possible reduction, and the only way to do this as far as supplies are concerned is to maintain an adequate control system. Every withdrawal from and addition to the supply department should be made by means of vouchers so that the actual amount on hand may always be known.

The value of inventory control is realized by every phase of the business from purchasing to selling. More and more, keen competition and a narrowing margin for distribution costs are forcing back upon the manufacturer the irksome burden of stocking his merchandise. Jobbers feel that goods of any assortment should be ready

for hasty orders, for ample manufacturing and shipping facilities guarantee him reasonably prompt deliveries and freedom from exorbitant prices. To satisfy these demands, expenses must be reduced wherever possible. In regard to inventory, these reductions must be made through conscious planning based upon soundly interpreted facts, and those who do this will achieve an early success with its attendant compensation, increased profits.

It is sometimes necessary, in the process of ordering materials, to go back days and often weeks and months from the time material is wanted, in order to be ready for the delivery of finished goods. In carrying on the purchasing policy, the following factors should be considered:[7]

1. the demand for a particular article
2. the saving by purchasing in quantity
3. the amount of money tied up in stock
4. the time required to obtain and to use the material
5. the possibility of changes in design, with a resulting depreciation in the value of the article.

The trends in prices of materials should be watched also, because sometimes, when finances permit and the budgetary board approves, advantage can be taken of special low-price situations whereby savings will be made that will more than offset the expense of carrying the

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7. "Graphic Production Control," Knoeppel, p. 152.

investment. From orders raw material requirements can be accumulated in detail, so as to facilitate purchases and secure better prices on large volumes. From this procedure more favorable terms can be obtained and greater discounts received. In some instances purchasing agents may have the idea that by buying cheaply they are justified in receiving a raise in salary. This is a disastrous policy, as has been already explained in a previous paragraph. The principal objective is the conservation of the company's investment in materials. Inventory control facilitates purchasing and assists in securing better prices, terms, and discounts on large volumes.

In certain industries the waste of materials is a serious drain on production.[8] This has been revealed by a comparative study of plants in the same field. In the recent Hammermill Survey it was determined that the lack of inventory control is the cause of one of the three main forms of operating waste. This waste results from:[9]

1. Wasted materials caused by dwindling of supplies, spoilage of merchandise, or of work in process
2. Open stockroom with no restrictions on withdrawals of supplies
3. Ill-adjusted inventories owing to understocking or overstocking of parts or supplies in relation to production, or of finished goods in relation to sales

Top-heavy inventories tie up capital in a manner which not only is nonproductive but which may involve danger

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[8] "Waste in Industry," Committee on Elimination of Waste in Industry of Federated American Engineering Societies, pp. 10, 11.

[9] "Hammermill Survey of Business Practice," Rept. IV, pp. 4, 5.

of loss through deterioration or obsolescence. Incomplete or poorly balanced stocks in manufacturing often involve serious losses in labor and equipment time. In many lines of business they constitute serious drains on profits; in merchandising they result in loss of sales and good will. Moreover, haphazard methods of planning result in delays through lack of material, or burden the job by an oversupply of material. Some practices result in frequent lay-offs, causing dissatisfaction, loss of good mechanics, and high labor turnover. Another waste from inadequate material control comes from the speculative purchasing of raw materials. All these facts result in excessive overhead costs which have a tremendous bearing on profits. When these costs are reduced, greater profits are realized.

If a manufacturer invests too much in one kind of material, he may suddenly realize his lack of ready cash to provide adequately for other materials. It is necessary to keep capital active and free from any encumbrances. Capital is the item that must be kept working and turning in profits, but when it is tied up in materials, it remains idle and is more apt to bring losses than profits.

The more often an inventory is sold at a profit, the smaller the amount of inventory and capital necessary to do a given volume of business, and the larger the operating profit for the period. Reduction of inventory

means less insurance, less taxes, less loss from spoilage, obsolescence, price decline, and other causes. The reduction of borrowed capital means a saving of interest. All these factors must be taken into consideration in dealing with the problem of inventory control. It is not proper to divorce the problem of physical control from financial control, and when the financial investment is limited to the least possible amount which will be consistent with economical production and service to customers, the profits will automatically be increased.

CHAPTER VI.

ANCILLARY CONTROL METHODS

In addition to the major control methods, which have been fully described, there are several other systems that influence profits either in a direct or indirect manner. Although these additional control methods are in many instances subsidiaries of the major methods and are used in conjunction therewith, they must not be overlooked or considered of small importance in effecting economies. These ancillary control are:

1. Personnel control
2. Standards control (commonly termed standardization)
3. Qaulity control
4. Sales control
5. Merchandising control
6. Expense-reduction control

The purpose of personnel control is to reduce the labor turnover and improve the relations between the employer and the employee. A large labor turnover is costly, owing to the necessity of continually changing and training operators, with a resulting high cost of process losses. Applicants for employment should be thoroughly examined concerning their past activities so that proper conclusions regarding their steadiness and ability may be determined. The progress and adaptability of the new employee should be checked at certain definite intervals, so

that it can be determined whether the requirements of the job are met or whether a transfer or release should be made. Whenever an employee leaves his place of employment a form should be filled out in order that the employer will know the reason for his leaving. Consequently, in the file there will be complete employment records of present and former employees, and ready access to such information will enable the management to make constructive charges in its policy towards employees.

Complete harmony between employer and employee forms the foundation of a better working spirit and a smoother running organization. This harmony can be obtained by the willingness of both the management and the employees to cooperate in matters pertaining to the conduct of the business. A committee composed of executives of the concern and delegates of the employees should be formed to investigate and study the problems concerning employees or suggestions offered by them. In maintaining this control the factors of education and recreation are important, because when proper atmosphere surrounds a worker, a more efficient and economical grade of work can be obtained. Educating and training the employee results in:[1]

1. Training worker for all work
2. Instilling habits of correct thinking
3. Increasing productive and repetitive powers
4. Establishing habits of proper reaction
5. Providing a system of waste elimination

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[1] "Readings in Industrial Psychology," B. V. Moore and G. W. Hartmann, p. 271.

6. Teaching method of attack
7. Developing brain fully
8. Developing self-reliance

Proper recreation plans and facilities help to improve the morale of the worker. Lunchrooms and resting rooms should be provided so that proper food and healthy resting places will be at the disposal of the employee. The encouragement of interorganization athletics and of use of the library aids in the development of physical and mental capacities and tends to increase alertness. The institution of rest periods at regular intervals during the day decreases fatigue and absence, and increases production and output. This is verified by the following statement:

> "In October of last year, the management, pleased with the improved condition of the men, decided to extend the rest-period system to include the entire personnel of the spinning department....Until October, 1923, the spinning department had never earned a bonus; in October and every month since, with one interesting exception, the spinners have made a bonus addition to their wages."[2]

Standardization is associated with many of the operations and systems of a concern. In the description of cost control the use of standards was explained as connected with the application of such a system. However, these standards of a cost-control system refer to predetermined costs, whereas in standardization the trend is towards uniformity. At the present time concerns are attempting to standardize equipment and processes in order to

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2. "Readings in Industrial Psychology," B. V. Moore and G. W. Hartmann, p. 336.

decrease complications and unnecessary movements. With uniformity in equipment, repairs are made more quickly and less stock has to be maintained for unforeseen breakdowns. From standardized processes simplification is obtained and idle time and costly delays are reduced. In a similar way this system is connected with office supplies, products, lighting arrangements, and the like. In its application to products, standardization is connected with the control of quality and is employed in conjunction therewith.

Control of quality is essential for any product, but it is of maximum importance for goods which are sold mainly on a grade-of-quality basis. The maintaining of quality in products builds up good will and sales interest and increases consumer acceptance and satisfaction. For the control of this element of a product it is essential to establish standards and specifications for purchasing. If this is not done, the costly procedure of allowing material to be worked on before imperfections are discovered will exist. The way of checking to determine that this quality is being maintained is through the medium of inspections. Before any raw materials are accepted they should be thoroughly examined for defects. The inspection should not be limited to this but should be carried on in conjunction with production control until shipment to the distributor or consumer is made. The result of this in-

spection and control of quality will be the production of a proper product at a proper profit.

Sales control is required so that correct knowledge of consumer demand, territorial demand, trend of market, trend of distribution, and salesmen's activities may be available. The method of distribution of a product is important since it is the means of reaching the proper market and consumer. Frequently, distribution is either inadequate or poorly routed, i.e., made to undesirable retailers and indifferent consumers. The demand for products varies in different territories. In one district a particular article might head the list, whereas in another it might be the poorest seller. When such a condition exists the sales policy must be flexible. In some instances the salesmen are not competent and do not obtain the proper quota for their districts, but an alert sales promotional manager will correct any such laxity. With a complete sales-control system, these situations will be discovered before it is too late, and thereby save the cost of correction.

Merchandise control is applied in conjunction with the control of sales. Merchandising is instrumental in conserving profits in that it brings the product to the attention and reach of the consumer in the most direct and inexpensive way. Many concerns do not properly study their advertising methods, and as a result employ national advertisers where local publicity would be more advantageous.

Some firms do not use the most suitable medium for advertising. Merchandising also takes into consideration the proper types of outlets and desired methods of distribution so that the product will always be within reach of the correct class of purchasers. The correct method of packing must be determined in order that the factors of usefulness and attractiveness will be impressed upon the public. A standard-size package is now being used by practically every concern, so as to eliminate excessive costs due to printing, storage, and transportation.

The system of controlling expense reductions is definitely united with the methods of controlling costs. The purpose of controlling costs is to keep them at the lowest possible level without affecting the material in process, whereas the purpose of controlling the reduction of expenses is to maintain a uniform and systematic procedure of reducing. It is a poor policy to cut expenses wherever it is merely thought desirable, without first considering the employees and the procedure of each department. Drastic changes in a department which are really unwarranted may so affect production that it will result in inferior work on materials, interrupted reductions, and dissatisfaction among employees. Whenever expense reductions are contemplated, it is necessary to consider them from every angle, so that uniformity will be effected, particularly in relation to all departments and branches considered as a unit.

SUMMARY AND CONCLUSION

Summary

From the discussion of the various control methods, it is obvious that strict regulation of business can be maintained so that keen competition may be met, profit margins insured, purchasing policies improved, and departmental coordination developed. These objectives are interrelated and have been considered from one aspect only, that of profits, because in the acquisition of profits all these objectives will need to be developed and realized.

In the course of conserving or even increasing earnings during the present conditions, it is necessary to turn to the internal organization and its operations in order to obtain improvements and economies. Profits cannot be increased by high-pressure sales methods, owing to the lack of consumer purchasing power. Profits must be assured by the elimination of excessive costs which arise within the business. In order to eliminate these excessive costs, production, budgetary, cost, and inventory control methods must be put into effect.

Production control enables management to keep costs at a lower level by minimizing the waste of time caused by idle employees and equipment, and by decreasing the delays caused by excessive or understocked inventories. The four elements of production control--planning, routing, scheduling, and dispatching--are the basis of a smooth

systematic procedure which eliminates unnecessary handling, trucking, and moving of material, and which controls the materials from raw stock to finished goods. Production is stabilized and peak periods, which affect labor and necessitate the releasing of employees during slack times and rapid hiring during rush seasons, are avoided. By controlling all these factors and minimizing waste in both material and time, the period of manufacture per unit is shortened and the corresponding costs decreased. However, this control system is not limited to manufacturing but, in many concerns, is accurately applied to the offices for the purpose of eliminating obsolete practices and duplications and of defining jobs so that employees will not be overlapping each other's work. When these overhead expenses are lowered, either the profit margin is increased or the business is in a position to meet its competition by lowering prices without affecting its income.

Budgetary control indicates to business management and the respective department foremen what the estimated requirements are for a designated period in the future. With this information each department can plan its work. Moreover, each foreman is advised as to what his operating expenses for the budgeted period should be, and it is his duty not to exceed this budgeted expense figure. Frequent comparisons between estimated and actual performance are made, and if any variations from the estimates occur, immediate investigations are made, which often result in

the correction of any unusually high costs. By means of budgeting, a procedure which is based on past statistics, market trends, and future prospects, forecasts (which determine the output for a period in the future) are made. This will eliminate either understocking or overstocking of supplies. This method also aids in lowering the cost of production per unit, owing to the ability to maintain an adequate check over each department. As a result, all available profits will be secured. Moreover, with an adequate budgetary control system, a business man is able to plan for profits, since the cost of producing the estimated volume is more or less specified.

Cost control, by means of predetermined costs, establishes a standard or measure of value with which actual costs are compared. Any variation from the standard means excessive costs which require immediate correction. This system also establishes the cost of production per unit and determines the economical lot of manufacture, which prevents delay and congestion. By applying cost control accurately, more work at a lower cost per employee is obtained, unnecessary movements are eliminated, and waste of time is reduced. With such results greater production at lower cost is obtained and, consequently, either the profit margin is increased or the business is placed in such a position that it is able to meet the price reductions of its competitors.

Inventory control eliminates the stagnation of working capital in large inventories and the obsolescence loss due to overstocking. By means of perpetual inventory control and the establishing of normal maximum and minimum demand requirements, an adequate amount of stock is carried to assure a satisfactory customer service and to prevent production delay. At the same time there is no superfluous inventory which will result in excess storage and insurance costs. Furthermore, this control system facilitates purchase, aids in securing better prices on large volumes, and helps to obtain more advantageous terms and discounts. By controlling materials in this manner a more frequent turnover of inventories is obtained and capital is kept in a more liquid condition.

In addition to these major control methods, there are subsidiary systems which should be considered, for they are helpful in obtaining profits in an indirect way or aid the major methods in obtaining their results.

Personnel control helps to decrease the labor turnover and bring about a more harmonious relation between the employer and the employee. Complete records of past and present employees should be kept, so that management may determine the value of each individual to the concern. Records of the past activities of applicants should be obtained and verified in order that management may determine

the calibre of those who desire employment from the concern. The instituting of educational and recreational policies is an important step in establishing a more harmonious relation between the employer and employees and in developing the mental and physical capacities of the worker. The employer and delegates of the employees should discuss problems directly affecting the personnel because such a policy assures the workers that their interests are being considered.

Standardization results in uniformity and simplification. Standardized equipment decreases costs caused by unforeseen breakdowns and lessens the amount of stock required for repairs. Standardized processes eliminate unnecessary movements which result in waste of time and material.

Control of quality is a factor which helps to increase sales, for it establishes good will and sales appeal. In order to maintain consumer demand it is necessary to deliver a product of value to the public, and the most satisfactory way of placing this value in a product is by means of quality. All raw material should meet certain specifications and should be inspected for imperfections before work is done upon it. Working on defective materials causes waste of time and material.

The sales control system is the basis of studying consumer and territorial demand. Some products are

more in demand in certain territories by a certain class of consumers, whereas in other districts these products cannot be disposed of very readily. Consequently, sales-promotion plans have to be flexible and arranged according to territories. It is also necessary to maintain a complete check on salesmen's activities so that the desired quotas will be reached.

Merchandising is instrumental in bringing the product to the attention of the consumer in the most direct and inexpensive way. It takes into consideration the proper advertising methods and the most useful and attractive means of packaging. The outlets and means of distribution are factors of this control method, since much unwarranted expense may be incurred by not placing the products in proper retailing outlets.

The control of expense reduction is used in conjunction with cost control entirely. This system varies from cost control only in that it subscribes uniformity in the reduction of expenses. Whenever changes are contemplated in the expenses of operation it is necessary to regard them not as affecting those points desirable but, rather, as affecting the status of the concern as a unit.

Conclusion

Abraham Lincoln once said, "If we could first know where we are, and whither we are tending, we could better judge what to do and how to do it."[1] This remark

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[1] "United States Chamber of Commerce," Bull. 40 Series U.C.A.), p. 1.

did not refer to business activity when it was made, but it is very appropriate if so interpreted. Frequently, business executives, because of present economic pressure, have been forced to make considerable changes in procedure and to introduce many innovations, but they have been handicapped by not being able to act decisively. Faulty or indifferent management has permitted business to operate without proper methods of control, and it has not been possible to prepare a true picture of the business for the directors. Profits have now reflected this past lack of responsibility, and high production costs, which have mounted rapidly, have retarded the natural growth of the business. It has been necessary for management to turn to more basic methods of procedure and to adopt the different control methods. The proper application of the control systems makes possible a comprehensive analysis of the trend of the business. Consequently, an alert manager is thus able to secure the maximum advantage in purchasing and selling, to adjust production as conditions warrant, and to maintain and probably increase the earnings of the business.

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